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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,840	02/25/2004	Shoji Ikeda		2955

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EXAMINER	
BERNATZ, KEVIN M	

ART UNIT	PAPER NUMBER
1773	

DATE MAILED: 12/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Advisory Action Before the Filing of an Appeal Brief	Application No. 10/786,840	Applicant(s) IKEDA ET AL.	
	Examiner Kevin M. Bernatz	Art Unit 1773	

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 13 November 2006 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:
   a) ☒ The period for reply expires 3 months from the mailing date of the final rejection.
   b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

   Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☐ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   (a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);
   (b) ☐ They raise the issue of new matter (see NOTE below);
   (c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   (d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: _____. (See 37 CFR 1.116 and 41.33(a)).
4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☒ Applicant's reply has overcome the following rejection(s): 102 and 103 rejections predicated on Katada et al..
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☐ For purposes of appeal, the proposed amendment(s): a) ☐ will not be entered, or b) ☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

   The status of the claim(s) is (or will be) as follows:
   Claim(s) allowed: _____.
   Claim(s) objected to: _____.
   Claim(s) rejected: _____.
   Claim(s) withdrawn from consideration: _____.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing a good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: See Continuation Sheet.
12. ☐ Note the attached Information Disclosure Statement(s). (PTO/SB/08) Paper No(s). _____
13. ☐ Other: _____.

Kevin M. Bernatz, PhD
Primary Examiner

Continuation of 11. does NOT place the application in condition for allowance because: applicants' arguments have been considered, but are not persuasive with regard to all the rejections of record. Applicants argue that the Examiner is misrepresenting the specification with regard to the 112 1st Paragraph enablement issue (pages 2 - 3 of response). The Examiner respectfully disagrees.

The Examiner notes that there appears to be a miscommunication between the Examiner and Applicants. The concern that the Examiner has is not with the words "uniaxial anisotropy" or "anisotropy magnetic field", but with the magnitude attached to the anisotropy magnetic field. The specification is replete with verbiage describing how to control the saturation magnetic field, Hs, to be 0.8 kA/m or more (see page 9, last full paragraph; page 12, paragraph starting "As shown in Fig. 6A"; and page 13, paragraph starting "By etching"). However, the specification is completely silent as how to control the anisotropy magnetic field to be 0.8 kA/m or more. The Examiner acknowledges that there is literal support for the words themselves (page 5, line 2), but this section appears to be a regurgitation of the originally filed claims (the Examiner notes that there is no disclosure of controlling the anisotropy magnetic field to be 0.8 kA/m or more in the detailed description of the claimed invention).

It appears to the Examiner that there are three potential reasons for the language of an "anisotropy magnetic field of 0.8 kA/m or more". (1) the word "anisotropy" in claim 1 and on page 5, line 2 of the specification was a typographical error and was supposed to be "saturated"; (2) the "anisotropy magnetic field" and the "saturated magnetic field" are different nomenclature for the same thing; or (3) the "anisotropy magnetic field" is an entirely separate field from the "saturated magnetic field" and Applicants are describing two separate embodiments of the invention, one with a saturated magnetic field, Hs, of 0.8 kA/m or more and one with an anisotropy magnetic field of 0.8 kA/m or more.

If case (1) is true, then the rejection under 112 1st Paragraph can be overcome by simply amending the specification and claim to recite "saturated magnetic field". If case (2) is true, then Applicants are requested to submit an executed declaration clearly stating that the two nomenclatures refer to the same field, and the specification should be amended to positively note that the two fields are the same (and the claims should be checked to insure there are not duplicate claims). If case (3) is true, then Applicants are requested to point to specific portions in the as-filed disclosure that illustrate to one of ordinary skill in the art on how to make the claimed recording medium to possess an anisotropy magnetic field of 0.8 kA/m or more, as opposed to making one that possesses a saturated magnetic field of 0.8 kA/m or more.

Applicants next argue that the Examiner improperly relies upon the Katada et al. reference, since the specific embodiments represented in Figures 3 and 5 are not identical to the claimed structure. The Examiner respectfully disagrees.

However, upon further review of the reference, even though Katada et al. explicitly states "the FeCo film deposited on the nonmagnetic NiFeCr film shows almost the same magnetization loops as those with NiFe layer, having almost the same value of HcHA" (page 2226, first full paragraph in second column), the Examiner notes that the basis for the inherency position regarding the saturation magnetization, Hs, value being 0.8 kA/m or more (~9.4 Oe or more) is improper. The reason that the inherency position is improper for the structure recited in claim 17, is that Figure 5 illustrates the magnetization curve for the [NiFe/FeCo]n multilayer. As can be seen in Figure 5, the HcEA, which is less than or equal to Hs, is only 4.9 Oe. As such, the value of Hs is 4.9 Oe or larger, which means it is not inherently greater than 9.4 Oe, as originally put forth by the Examiner. As such, the rejection of claims 17, 18 and 20 predicated on Katada et al. is withdrawn.

Applicants then argue that the Iwasaki et al. reference fails to teach or suggest non-magnetic layers meeting Applicants' claimed composition limitations. The Examiner respectfully disagrees.

Applicant(s) are reminded that the rejection is based on the entire reference(s) and not just a piece meal analysis of the cited reference(s). In the instant case, Iwasaki et al. explicitly teach non-magnetic interlayers that can comprise Cr (col. 14, lines 31 - 40: "Ferromagnetic films 24 according to the present invention are formed on opposing surfaces of a pair of ferrite cores 21 and 22 through interlayers 23. The interlayers 23 are used to enhance the adhesion strength and to prevent mutual diffusion between the ferrite cores 21 and 22 and the ferromagnetic films 24") directly above the recitation of the "intermediate layers 32 that increase the adhesion force" (col. 14, lines 52 - 61). The Examiner deems that one of ordinary skill in the art would readily appreciate that a teaching two paragraphs above that "Cr, SiO2 or NiFe" are layers that "enhance the adhesion strength" would indicate that such layers can be used for "intermediate layers 32 that increase the adhesion force". Example 8 is pointed to because it explicitly states using a Cr film between an non-magnetic substrate and the magnetic film for improving the adhesion strength (which is exactly identical to the structure described in col. 14, lines 52 - 61: i.e. an intermediate layer for improving the adhesion strength between a non-magnetic substrate and a magnetic film). As such, the Examiner does not find Applicants' arguments convincing.

Regarding claim 18 (see page 7 of Applicants' response), Applicants are misquoting the Examiner. The Examiner has admitted that Iwasaki et al. fails to explicitly disclose the recited stress range, but that the stress range, if not inherent, would still have been obvious. The Examiner notes that it is proper to make 102 and 103-type rejections where there is a question of inherency since the Patent Office is not capable of performing measurements to confirm the property ranges of prior art inventions.

Applicants then argue that the Saito et al. reference fails to explicitly teach an embodiment meeting all the claimed limitations and that the Examiner "should have to withdraw his statements that specifically rely on [the comparative examples of Saito et al.]" (pages 7 - 9 of response).

The Examiner that there appears to be some confusion, since the Examiner does not see any citation to a comparative example in the above identified rejection (Paragraph 7 of the Office action mailed August 8, 2006 refers to col. 7, line 3 bridging col. 8, line 11 and Paragraph 10 of the Office action mailed February 16, 2006 refers to col. 1, lines 6 - 12, col. 7, lines 21 - 25 and 46 - 56, col. 8, lines 3 - 8 and col. 13, lines 1 - 17; as well as Figures 2, 13, 18 and 21). The only time the Examiner has mentioned comparative examples with regard to the Saito et al. reference is in response to Applicants' initial arguments directed to comparative examples. Applicants are requested to insure that they are looking at U.S. Patent 5,304,975 and not another reference by "Saito et al.".

With regard to Applicants' argument that Saito et al. does not disclose the materials for the magnetic and non-magnetic layers, the Examiner notes that Saito et al. explicitly teaches that the "magnetic layer constituting the multilayer is formed of, e.g., a transition metal such as Fe, Co, or Ni, or alloys containing at least one of such transition metals. More specifically, FexCo1-x, ..." and "The material of the nonmagnetic layer is not particularly restricted as far as it is nonmagnetic and it exhibits a good magnetoresistance effect. For example, a

metal such as Cr, Ru, Cu, Al, Ag, or Au, or an alloy containing such a metal can be used" (col. 7, lines 21 - 24 and lines 46 - 50). As such, the Examiner does not find Applicants' arguments convincing.

Next, Applicants argue that the Examiner has used improper hindsight with regard to the combination of Iwasaki et al. in view of Osaka et al. (pages 9 - 11). The Examiner respectfully disagrees.

Applicant(s) are reminded that "the test for obviousness is not whether features of the secondary reference may be bodily incorporated into the primary reference's structure, nor whether the claimed invention is expressly suggested in any one or all of the references, rather the test is what the combined teachings would have suggested to those of ordinary skill in the art." Ex parte Martin 215 USPQ 543, 544 (PO BdPatApp 1981). In the instant case, the statement "the film stress is increased, making it difficult to obtain a film of uniform quality" is deemed by the Examiner to clearly suggest to one of ordinary skill in the art that the film stress should be kept as low as possible, since if the film stress is high (i.e. "increased"), it may be difficult to obtain a film of uniform quality. As such, the Examiner deems that the above rejection is proper.

Applicants next argue that the Examiner has failed to support a position that it would have been "obvious to optimize" the surface roughness in the combination of Iwasaki et al. with Kamiguchi et al. (pages 11 - 13 of response). The Examiner respectfully disagrees.

Kamiguchi et al. clearly states that "increased film unevenness ... largely affects the magnetic characteristics, causes inter-diffusion of atoms at the stacking boundaries, and hence invites serious deterioration of the device characteristics" (col. 9, lines 27 - 32) and that by "reducing the boundary roughness between the crystal growth controlling layer and consequently reducing the unevenness on boundaries between stacked films within the functional layer 3, inter-diffusion of atoms can be prevented more effectively" (col. 10, lines 5 - 10: emphasis added). Kamiguchi et al. further go on to disclose surface roughness (boundary roughness) values of 2 nm or less, 1.5 nm or less, 1.0 nm or less and even ~0.5 nm (col. 9, lines 6 - 16; col. 10, lines 40 - 52; col. 16, lines 22 - 34; col. 18, lines 16 - 36; col. 26, lines 58 - 65; col. 40, lines 4 - 14; col. 41, lines 46 - 63; and Table 1). Finally, the Examiner notes that Inoue et al. was further cited as a teaching reference to teach that controlling the surface roughness in all types of magnetic heads to insure smooth surfaces is recognized by one of ordinary skill in the art. As such, the Examiner deems that there is sufficient guidance in the cited art to support the Examiner's position that one of ordinary skill in the art would recognize that controlling/optimizing the surface roughness to be <2 nm, <1.5 nm or <1 nm is desired to insure good magnetic characteristics of any type of magnetic head application.

Applicants' next argue the combination of Iwasaki et al. with Sun et al., arguing that the combination is not proper (pages 13 - 14 of response). The Examiner respectfully disagrees.

Applicant(s) are reminded that "the test for obviousness is not whether features of the secondary reference may be bodily incorporated into the primary reference's structure, nor whether the claimed invention is expressly suggested in any one or all of the references, rather the test is what the combined teachings would have suggested to those of ordinary skill in the art." Ex parte Martin 215 USPQ 543, 544 (PO BdPatApp 1981). In the instant case, Iwasaki et al. teaches the claimed structure and Sun et al. is merely relied upon to teach the knowledge that the claimed saturated magnetic flux density is not only old in the art, but also desired for high areal recording density applications. Since Sun et al. teach the achievement by using substantially identical magnetic compositions as disclosed by Iwasaki et al. (as admitted by Applicants - response, page 14), the Examiner deems that the combination is proper.

Finally, Applicants argue the combination of Saito et al. with various references but fail to distinctly point out any alleged errors other than that the combinations are not properly motivated by the prior art (pages 14 - 15 of response). The Examiner respectfully disagrees and notes that the rejections of record provide clear basis and motivation statements for the combinations under 35 U.S.C. 103(a).

With regard to Applicants' concluding arguments directed to Katada et al., the Examiner notes that these arguments are moot since the rejection predicated on Katada et al. has been withdrawn.